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Stalk Rots of Corn

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Control Plant Diseases

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PLANT DISEASES



Mimeo BP 5-6
Revised

Stalk Rots of Corn

Stalk rots are the most important diseases known to attack corn in Indiana. Over the years, losses to stalk rot have been greater than losses from leaf diseases, ear rots and smut. Greatest loss is due to breaking of diseased stalks. Broken stalks make corn difficult to pick, and the ears are often left to decay on the ground.

Four stalk rots occur in Indiana--diplopedia stalk rot, gibberella stalk rot, charcoal rot and pythium stalk rot. The first three occur in late summer and fall when corn begins to mature. Pythium stalk rot occurs during the summer, often before silking.

DESCRIPTION AND SYMPTOMS

Diplodia stalk rot is quite general nearly every year. The lower portion of a diseased stalk rapidly loses its color and firmness. It becomes tan to brown and is easily crushed. Inside, the stalk is discolored, generally dry and shredded, and only water conducting vessels remain. Sometimes plants may be attacked as early as 3 to 4 weeks after silking. Leaves of such plants have a dead gray-green appearance as if frosted.

Diplodia stalk rot is a fungus disease caused by Diplodia maydis. The disease-producing fungus lives over from one season to another on old stalks in the field. At harvest or by the following spring, the spore-containing sacks of the fungus, which look like small black specks, can be seen on the

stalk. Usually, infection takes place in the older roots, and as the plant matures, it progresses up into the crown and stalk.

Gibberella stalk rot usually occurs in the northern half of the state, especially during moderately cool summers. Symptoms are essentially the same as diplopedia stalk rot except that the interior of the diseased stalk is often reddish.

The disease is caused by the fungus Gibberella zeae which forms spore-bearing bodies on lower parts of the stalk. These small, flask-like, black bodies produce spores on the stubble in the following spring and summer. Like diplopedia stalk rot, infection begins in the roots and crown and progresses into the stalk.

Charcoal rot is occasionally found in Indiana. Symptoms are much like those mentioned above, except the interior of the rotted lower internodes is dark gray or black due to the color of the fungus, Rhizoctonia bataticola.

All three stalk rots become more severe when disease, hail or leaf feeding insects reduce the leaf area of plants.

Pythium stalk rot is quite different in many respects from the other three stalk rots. Stalks are attacked just above the soil line or at the first or second internode. The symptom is a brownish, sunken, soft area seldom extending beyond one internode. The stalk appears constricted and eventually

topples over, but usually does not break off. The water conducting vessels remain intact, and the plant may continue to live lying on the ground. Unlike the other stalk rot fungi, Pythium butleri attacks young, vigorous plants well before they mature and often before they silk. Warm, humid weather favors disease development.

There is no known control for the disease at present.

CONTROL

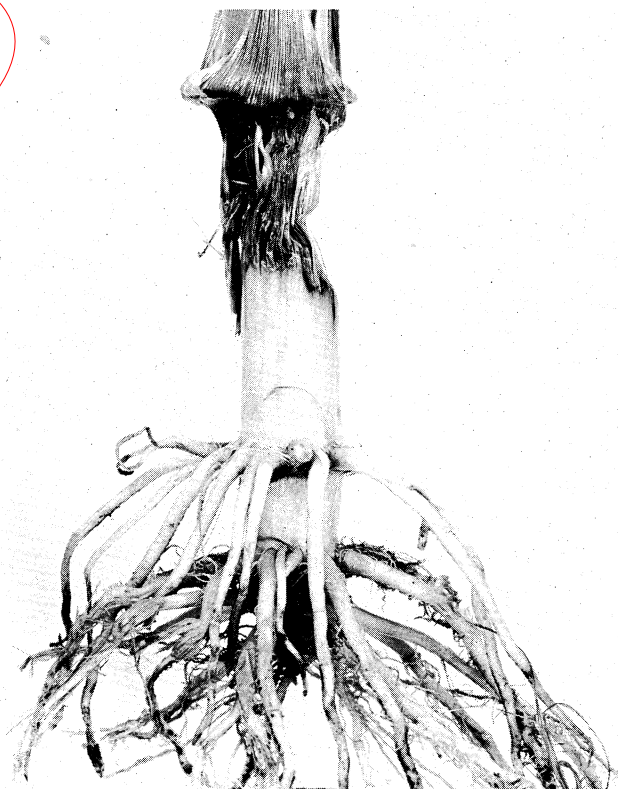
Occurrence of diplodia, gibberella and charcoal stalk rots are closely associated with the maturation of stalks. It is only some time after silking that infection progresses into stalks.

Here are three ways to help reduce stalk rots and breakage:

1. Use "full-season" hybrids. These mature slowly and, therefore, resist the advance of rot-producing fungi into the stalks. Hybrids with the inbred lines B14, B37, C103, Oh43 and H60 in their pedigrees show less rot and lodging than many others, yet they will produce good well-matured ears.

2. Keep soil well-supplied with potash. When potash is deficient, stalks will mature earlier and, therefore, become more susceptible to rotting and breakage. A combination of too much nitrogen and too little potash also increases stalk rot and breakage.

3. Use blight-resistant hybrids, since leaf blights reduce leaf area. Ind. 814, Ind. 837 and Ind. 863 combine leaf-blight and stalk rot resistance and may be used in their recommended areas.



Diplodia stalk rot: interior of diseased stalks. Pythium stalk rot: rotted area at soil line.

10/62